1 Executive Summary

Resource energy consumption in Wisconsin increased 4.5 percent in 2007 after decreasing 2.1 percent in 2006. Petroleum use increased 0.3 percent in 2007, after falling by 1.4 percent in 2006. Coal, which is used primarily for electricity generation, increased by 0.3 percent while electricity imports increased to 2005 levels. A hotter summer increased the demand for electricity to run air conditioners, and the demand for natural gas to generate electricity. Energy use was boosted by the Wisconsin economy, which experienced a 0.5 percent increase in total employment in 2006 and a 2.6 percent increase in the gross state product.

Sector Energy Use

The industrial sector consumed 23.8 percent of all the end use energy used in Wisconsin in 2007 (page 10). Industrial users are primarily dependent on natural gas (41.5 percent) and electricity (30.1 percent) to fuel manufacturing activities such as papermaking, printing and food processing.

The commercial sector used slightly more energy in 2006. End use energy for commercial activities increased by 2.7 percent in 2007. Since 1980, end use energy has increased by 55.4 percent, with electricity use more than double over the same period.

Residential energy use increased 6.7 percent. Natural gas is the dominant fuel used in households, accounting for 48.8 percent of all energy consumed. The residential sector includes energy used in appliances and in space and water heating. Residential use of renewable resources such as wood used for space heating, increased by 15 percent in 2007.

Transportation energy use increased 1.8 percent in 2007 while renewable transportation fuels, such as ethanol mixed with gasoline (E10 and E85) increased by 23.6 percent. The transportation sector includes vehicles such as cars and trucks, railroads, aviation gas and jet fuel, and diesel fuel used in farming.

Expenditures

Total Wisconsin expenditures for energy increased by 9.9 percent in 2007, setting a new record of $21.6 billion (a $1.9 billion increase). Expenditures rose across all sectors, with the largest increase in the residential sector of 11.2 percent ($470 million), followed closely by the transportation sector at 10.9 percent ($993.7 million).

Weather

Wisconsin climate is showing a warming trend. Winter weather has been warmer than the 30-year normal 17 of the last 18 years. In 2007, there were 8.1 percent fewer heating degree days than the 30-year normal and 7.6 percent fewer heating degree days than 2006. The summers are also getting warmer, which places a burden on the electrical system through increased cooling for space conditioning and food storage. The number of cooling degree days increased 9.8 percent over 2006, and 33.1 percent more cooling degree days than the 30-year normal.

Natural Gas

Natural gas prices, on average, increased 3 percent in 2007, and natural gas use increased 4 percent. Cold winter weather led to a 8.4 percent increase in the residential sector in 2007. There was an increase of 22 percent in natural gas used to generate electricity. Overall, natural gas use has increased more than 29.3 percent since 1990 as access to natural gas increased, and equipment to use natural gas became more pervasive and efficient. The major markets for natural gas in Wisconsin are space heating, industrial processes and electricity generation.

Petroleum

Petroleum use declined in the residential, commericial and industrial sectors, while increasing in the agricultural, transportation and electric utility sectors. More than 83 percent of all petroleum products were used for transportation purposes. Petroleum provides more than 29 percent of Wisconsin's resource energy needs. The United States imported 64.9 percent of the petroleum it used in 2007, a decrease from 2006. More than 40 percent of these imports came from OPEC countries. World oil production decreased 0.3 percent in 2007, falling short of the record high set in 2005.

Coal and Nuclear

Coal use increased by 0.3 percent in 2007, to 25.9 million tons, and has been the most heavily relied upon fuel in Wisconsin since 1996. Coal accounted for 29.4 percent of all the energy used in 2007 and 59.1 percent of the energy used by Wisconsin utilities and independent power producers to produce electricity. More than 42.4 percent of the coal used in Wisconsin comes from the western part of the nation. Utility coal prices increased 13.4 percent in 2007. In 2007, nuclear power accounted for 21.4 percent of the energy used by Wisconsin's utilities to produce electricity.

Electricity

Electricity sales increased 2.2 percent in 2007. In 2007, the industrial sector was the largest electricity user in Wisconsin, using 35.7 percent. However, the commercial and residential sectors are not far behind, using 32.9 percent and 29.5 percent respectively.

Renewable Energy, Energy Efficiency and the Environment

Renewable energy use increased 10.8 percent in 2007, primarily due to increased use of ethanol, wood, solar and biomass (e.g., paper byproducts). The increase in renewable energy may also be partly because all data on renewables has been historically revised to represent renewable energy that:

- meets the definition for renewable energy under Wisconsin law. For example, power generated from burning municipal solid waste and refuse-derived fuels are not included in the biomass figures.
- is metered and used at the point of production or sold to the electrical grid. Previously, this publication included estimates for passive solar power (e.g., daylighting in buildings).

Wood remains Wisconsin's most-used renewable energy resource. Wisconsin's consumption of ethanol increased 23.6 percent In 2007. This is partly due to the increased availability of ethanol in the state. From August 2007 to August 2008, the number of gas stations selling E85 increased from 67 to 111. In 2007 renewable energy produced more than 304 million kWh of electricity in Wisconsin. Production of electricity from renewable energy sources will increase in the future as Wisconsin utilities comply with the state's renewable energy portfolio standard outlined in 2005 Act 141.

In 2007, two key indices of Wisconsin energy efficiency showed a increase in energy use. These indices were total energy use per $1,000 of gross state product and electric energy use per $1,000 gross state product. When comparing Wisconsin's 2005 per capita energy use to the other 49 states and the District of Columbia, Wisconsin is in the middle (28th largest user of 51), with its per capita energy consumption 1.9 percent above the U.S. average.

Carbon dioxide emissions from energy use increased by 1.5 percent. Emissions of carbon dioxide have now increased almost 22.5 percent since the 1990 base year.

Wisconsin Energy Statistics 2008 presents the most current information available on Wisconsin's energy supply system and use patterns. The current edition builds on more than 37 years of continuous energy data collection and analysis by the Wisconsin State Energy Office.